Attachment 3

February 13, 2003

Docket Section
National Highway Traffic Safety Administration
400 Seventh Street, SW
Washington, DC 20590

Subject: Notice of Proposed Rulemaking, Light Truck Average Fuel Economy Standards Model Years 2005-07

Reference: Docket No. 2002-11419, RIN 2127-AI70, Notice 2

The Alliance of Automobile Manufacturers (Alliance) is a trade association of 10 car and light truck manufacturers who account for more than 90 percent of U.S. vehicle sales. Member companies, which include BMW Group, DaimlerChrysler, Ford Motor Company, General Motors, Mazda, Mitsubishi Motors, Nissan, Porsche, Toyota, and Volkswagen, employ about 600,000 Americans at 250 facilities in 35 states.

Attached are the Alliance's comments on the December 16, 2002 "Notice of Proposed Rulemaking, Light Truck Average Fuel Economy Standards Model Years 2005-07." The setting of future standards is a complex issue that can have detrimental effects on industry, the economy and consumer choice, if done without proper consideration of all issues. The standards proposed in the rulemaking will pose a challenge to the automobile industry. We are providing suggestions for improving the methodology and assumptions that should lead to an improved final rule.

The Alliance appreciates the opportunity to respond to this notice. If you have any questions concerning these comments, please contact me at (248) 357-4717.

Sincerely,

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Director, Regulatory Programs

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DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
49 CFR Part 533
[Docket No. 2002-11419, Notice 2]
RIN 2127-AI70
Notice of Proposed Rulemaking
Light Truck Average Fuel Economy Standards Models Years 2005-07

The Alliance of Automobile Manufacturers (Alliance) and its member companies are taking a proactive leadership role in researching and developing advanced fuel economy technologies for passenger cars and light trucks. We believe that incentives to spur the development of these advanced technologies are the best long-term solution to addressing energy issues. We look forward to working with National Highway Traffic Safety Administration (NHTSA or the Agency) to finalize light truck Corporate Average Fuel Economy (CAFE) standards for 2005 through 2007 model years.

The setting of future standards is a complex issue that can have detrimental effects on industry, the economy and consumer choice if done without proper consideration of all issues. As stated in the Notice of Proposed Rulemaking (NPRM), the light duty truck standards proposed will be a challenge to the automotive industry. Many external factors could frustrate the manufacturers' plans to meet the increased standards.

Alliance member companies will provide confidential data in responding to NHTSA. However, we are consolidating some of the responses and comments from our members into a single response.

Comments on Section II - Agency Proposal

The Alliance believes that the proposed standards are technically challenging, especially given the increasing government emissions and safety requirements and consumer wants. Many of the future requirements will increase vehicle costs and weight and could in some cases limit the implementation of fuel-efficient technologies. This is further compounded by the challenging economic climate that is occurring in the automotive industry and the Nation.

The Agency's analysis did not properly account for the risks identified by the manufacturers and focuses only on the upper range of the projections contained in manufacturers' responses. If any of the risks identified by manufacturers comes to fruition, alternative and more costly measures will have to be implemented in order to meet the projected levels and in some cases manufacturers may not be able to meet the proposed standards.

We agree with NHTSA's decision to omit hybrid electric and diesel technologies in the estimates of technological feasibility for this time period. There are several hybrids on the road today (currently less than 0.2% of the market) and several more are expected to be introduced by the 2007 model year. However, hybrids and other advanced technologies cost more, and in the foreseeable future are unlikely to have an impact on the industry's ability to increase CAFE. For example, the National Research Council (NRC) estimated the cost of a full-function hybrid system to be between $3,000 and $5,000. At current gasoline prices, savings in fuel expenses would not offset the initial cost of such technology.
Diesel powered vehicles also cost more than their gasoline counterparts, and have not gained overall acceptance by our customers due to the low price of fuel and past experience with this technology. In addition, there is concern about the ability of diesel vehicles to achieve sufficiently low emission levels required by the Tier 2 and LEV II emission standards.

Incentives for advanced technology vehicles are needed for widespread acceptance. We believe that market driven actions, including incentives for advanced, fuel-efficient technology such as those contained in Senate Bill 517 from the 107th Congress can help promote energy conservation.

Comments on Section V - Technological Feasibility and the Preliminary Economic Assessment (PEA)

To evaluate the technological feasibility, the Agency increased the CAFE projections of the manufacturers by the application and pull-ahead of technologies and the deletion of larger engines.

Concerns About the Analysis

The Agency made some incorrect assumptions and conclusions in its analysis of the technological feasibility of the manufacturers. The Agency incorrectly concluded that the product plans submitted by manufacturers were based on no knowledge of an increase in fuel economy standards. Even though the timing and magnitude of the increase was unknown, Alliance members have been anticipating an increase in fuel economy requirements ever since Congress discontinued its recent practice of including so-called "CAFE freeze" legislation in the Department of Transportation (DOT) appropriations bills. Many Alliance members have been modifying their product plans accordingly.

To determine the net increase in CAFE due to multiple technologies, the Agency added the benefits of the technologies when determining manufacturers' technical feasibility. As discussed later in this document and in our May 8, 2002 response, multiple technologies that address the same opportunity for improvement, e.g., pumping losses, cannot be added together in a straightforward manner. Though the technologies selected by the Agency in this analysis may not have interactive effects, future analysis must consider this fact.

As the Agency added technologies to the manufacturers' product plans, lead-time and manufacturers' cycle time should have been considered. Technologies cannot be incorporated in every vehicle at the same time, due to capital costs, differing vehicle and powertrain planning cycles, and engineering resource constraints both at the manufacturer and supplier level. The incorporation of production intent technologies is dependent on the business case, customer acceptance, and cost effectiveness. The pull ahead of technologies is not always an option for manufacturers to increase their CAFE status.

The suggestion by the Agency that manufacturers can simply add new “off the shelf” technologies not currently in their product plans is faulty. When technology is said to be “on-the-shelf” it is available to be considered for integration into complete control systems, but it is not simply “bolted on” to an existing vehicle. Integrating any technology into the “whole vehicle” package is a complex task that must consider what a manufacturer is going to build and when and how it is going to build it. Even after a vehicle prototype is created using this new technology, eventually these vehicles are going to be built on a highly automated assembly line and customers expect to use them for many years and many, many miles of worry-free motoring. Manufacturers must make sure that the design is optimized not just for assembly but also for serviceability and customer satisfaction in-use. Once this level of confidence is achieved in the design, manufacturers give the go-ahead to build the long lead-time manufacturing tools to keep the product on schedule. Suppliers may also have some of the same lead-time constraints for the components they are going to provide the manufacturers.

Testing of the actual hardware of the “prototype” design is needed and may involve iteration of the production design as clearer understanding of the interaction of the various sub-systems is developed. A second prototype phase may be needed to prove-out the final production designs. It is with this “production intent” vehicle that manufacturers can begin the durability and certification testing needed to obtain all of the required regulatory approvals. Some technologies will require plant modifications at a manufacturer's assembly plants and those of its suppliers. All of a manufacturers employees involved must also be trained on the tools and processes, required by new technologies. Only then can a manufacturer finally get to the task of building vehicles. This is a multi-year task and a manufacturer cannot revise a product plan that is already well established.

The processes mentioned above are only part of the cycle, however. Manufacturers must continuously evaluate their processes and customer acceptance of their products. Manufacturers make process improvements and resolve any problems that are found. Vehicles are evaluated over the next several years to assure that they continue to meet requirements and customer expectations. Premature retirement of existing technologies or applying new technologies too soon disrupts this process and can result in poor performance and ultimately customer rejection of promising new technologies that could have provided great benefit if allowed the necessary time to mature.

In addition to the potential of destroying market acceptance of new technologies, disruption of the normal product development cycle has severe financial consequences for vehicle manufacturers. As Chart 1 shows, the capital-intensive nature of the auto industry requires stability in product planning and avoidance of premature retirement of technologies and investment in order to maintain economic viability. The pull ahead of a new product/technology that results in retiring a current one by even one year leads to lost returns of the current technology. The generic chart below depicts a situation in which the manufacturer is still able to realize a positive return despite the pull ahead, but it is also possible that the pull ahead action can be the difference between a positive return and a loss.

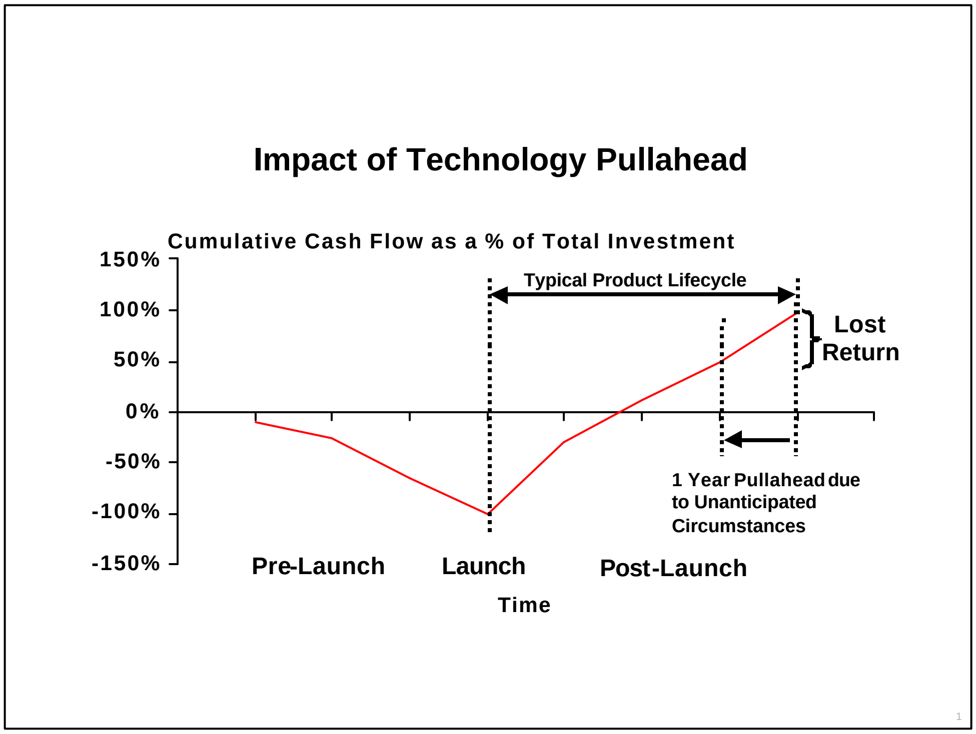

Chart 1

Some of the technologies suggested still have implementation issues. The Agency added a number of technologies that have not yet been fully developed or have implementation issues that will take time to resolve. In the answer to Question 2 of the NHTSA Request for Comments (RFC) of this rulemaking, the Alliance cited issues with the implementation of several technologies now incorporated in the Agency's recommendation for technologies to be used in the 2005-07 MY timeframe. A discussion of the issues of the technologies is found in our comments to Section VI of the NPRM.

NHTSA acknowledges in the notice that although manufacturers may receive credit toward CAFE compliance by producing alternative fuel vehicles, NHTSA cannot consider the availability of such credits in determining the "maximum feasible" CAFE level. Nevertheless, the Agency is aware of the practical importance of these credits and the uncertainty manufacturers are facing with regard to their future product plans in the absence of a decision by NHTSA to extend the credits beyond model year 2004. We request that NHTSA move quickly to extend the period for earning these credits through model year 2008. Granting the authorized extension will end this regulatory uncertainty and give manufacturers some much needed flexibility in meeting near term CAFE standards.

Safety Concerns

In the NPRM, the Agency requested comments on the effect of higher standards on safety.

> "The agency's analysis assumes manufacturers will not reduce vehicle weight in order to comply with the proposed new standard. Under this approach, our CAFE standards will not adversely affect motor vehicle safety. However, we invite comments on this approach. Commenters are asked to provide data and analysis that manufacturers will comply with these new standards by reducing vehicle weight and, if so, the safety consequence of weight reduction."

We believe that NHTSA's assumption that weight reduction will not be used to meet the proposed standards or any standards that are set above a manufacturer's capability may prove to be incorrect. At a minimum, it may be necessary to employ weight-reduction measures just to hold the mass of vehicles stable, as consumers demand more features and as safety and emission standards add weight. In addition to weight reduction, there are other ways increased CAFE standards can adversely affect safety, such as the "rebound effect" described below.

If CAFE increases the number of miles per gallon, then it reduces the (gasoline) cost per mile driven. And when the price of a "good" like travel falls, people buy more of it, i.e. they drive more. This "rebound effect" has been estimated by experts at between 20% and 50%[1]. In 1994 the Clinton Administration's "Car Talk" participants, after studying the question, estimated the rebound effect as 35%. However, NHTSA has chosen to use 15% as its estimate of the rebound effect for purposes of this rulemaking. We urge that NHTSA instead use a rebound effect of 35% with a sensitivity analysis of 20% to 50%. The NHTSA value of 15% is outside the bounds of estimates that can be justified by recent research.

The rebound effect impacts safety because increased vehicle travel increases the exposure of motorists to motor vehicle crashes. An increase of miles per gallon from the current standard of 20.7 mpg to 22 mpg is an increase in fuel economy of 7.25%. Using NHTSA's estimated rebound effect of 15% would increase vehicle miles traveled by 1.09% and increase fatalities by 124 during the 2005 to 2007 MY period (based on a fatality rate in the U.S. of approximately 1.5 deaths per 100 million miles or 42,000 per year). Using more reasonable rebound estimates of 20% and 35%, the projected increase in vehicle miles traveled is 1.81% to 2.54%, which would increase fatalities by 164 to 289 during the period considered under this rulemaking. This added number of fatalities caused by the rebound effect of CAFE would continue in future years, as well.

As noted in the PEA (endnote 4), NHTSA intends to study the effects of increased travel on both safety and congestion in their final economic assessment. The safety impact of a 35% rebound effect should be considered in this analysis.

NHTSA Must Fully Account For Implementation Risks

In its RFC the Agency asked manufacturers to comment on the risks associated with implementation of new technologies achieving their potential and how to take these risks into account. Manufacturers are aggressively applying technologies and making considerable investments in new powertrain technologies. The confidential submissions of the individual manufacturers reflected this aggressive application of technology, and quantified the most prevalent risks, including customer acceptance, timing, technology interaction and attribute trade-offs, program specific risks, and competing resource priorities. However, it appears that NHTSA did not address the potential impact of these associated risks and assumed manufacturers will meet their projected CAFE levels or higher. The identification and selection of the optimal mix of products and technologies to improve fuel economy will depend on many factors. These include: availability of technology options, cost of technology, level of technology applied, success of each new

[1] Greening, Greene, and Difiglio, Energy Policy 28 (2000) pp. 389-401 (literature review).

technology in meeting its targets, range of product offerings, overall economic climate, customer requirements for utility, size, performance, usage patterns, options, and powertrains, and the level of new regulations in vehicle safety and emissions. Long-term projections for new technologies are always risky and the level of uncertainty and risk increases the farther out the projection.

By not accounting for the risks identified by manufacturers and focusing only on the upper range of the projections contained in manufacturers' responses, NHTSA has proposed standards that are extremely challenging. If any of the risks identified by manufacturers comes to fruition, alternative and more costly measures will have to be implemented in order to meet the projected levels and in some cases manufacturers may not be able to meet the proposed standards. In light of its decision not to adjust the proposed standards to account for these risks, the agency must ensure that any other actions it takes be done in a manner that minimizes potential adverse impacts on manufacturers' CAFE. Two particular areas under the control of the Agency are vehicle classification determinations and new vehicle safety requirements that are either being developed or are already proposed.

In its analysis, the Agency suggested that some of the risks could be negated by speculating that there will be mix and option changes dictated by the market. Risks cannot be reduced by assuming that an increase in popularity of crossover vehicles may limit the future sales of full size sports utility vehicles. In addition, we do not expect that consumers will consider traction control and limited slip differentials as replacements for 4WD in vehicles and no longer order the 4WD option.

Increased sales of full-size trucks could erode the CAFE estimates in spite of our plans. This is one of the fundamental challenges inherent in the current CAFE system. Performance is dictated by what our customers purchase and not by what we offer. We are committed to offering customers a range of choices when it comes to models that suit a range of lifestyles.

Vehicle Classifications Must Remain Stable

The product plans and CAFE projections submitted by the manufacturers in response to NHTSA's RFC are based on the current light truck definitions and the way in which these definitions have been administered in practice over the years. A change in the wording of the definitions themselves, or in the way they are applied, could significantly impact a manufacturer's light duty truck and passenger car CAFE capability and cause economic harm. Manufacturers prepare their product plans relying on the continuation of the existing vehicle classification framework and on consistency in the implementation of that framework. No change to the definitions themselves or in the application of those definitions to future products should be undertaken without notice and an opportunity to comment, as well as ample lead time for manufacturers to adjust to any change. We therefore expect that NHTSA will not change its approach to the light truck definitions in any way during the time period that the proposed new standards take effect.

Comments on Section VI - Economic Practicability

To evaluate the economic practicability of the proposed standards, the Agency increased the CAFE projections of the manufacturers to the proposed standards by using a model that applied NRC type technologies in order of cost effectiveness. We have concerns about the methodology and benefits and costs of the technologies used in this analysis. In addition to the issues listed below, we have identified several assumptions used in NHTSA's cost assessment that appear to be incorrect; they are listed in Attachment 1.

Estimated Benefits of Technologies Are Overstated

In developing the regulatory costs and benefits for the proposed standard, the Agency utilized data from the NRC Report[2]. In examining the work of the Agency on the cost per percent fuel economy improvement, [Table VI-1 in the Preliminary Economic Assessment] we conclude that these costs are underestimated - in some cases by a considerable margin. The Alliance believes that many of the NRC cost per benefit projections were not realistic. The Agency has even lowered the cost per percent improvement from the NRC analysis on some items as shown in Table 1.

Technology	NRC Cost per Percent Improvement	NHTSA Cost per Percent Improvement	Cost Differential
6-speed Automatic Transmission	$140	$70	($70)
Electric Power Steering	$140	$75	($65)
Engine Accessory Improvement	$65	$20	($45)
Aero Drag Reduction	$47	$30	($17)
Engine Friction Reduction	$29	$23	($6)
Improve Rolling Resistance	$28	$22	($6)
Low friction lubricants	$10	$6	($4)
Variable Compression Ratio	$88	$86	($2)

Table 1

During the October 5, 2001 NRC Report hearing, the Alliance stated that the NRC Report had significantly overstated fuel economy potential of some technologies and included technologies that are not feasible for implementation even within the next 15 years.

The fuel consumption improvement potential from engine friction reduction, variable valve lift and timing, intake valve throttling, camless valve actuation and 42-volt electrical systems are singled out, in particular, as overstated. Camless valve actuation and variable compression ratio systems while interesting concepts under laboratory investigation are not feasible for implementation within the next 15 years, if ever. These issues are discussed below.

Some of the Technologies Suggested Still Have Implementation Issues

The Agency added a number of technologies that have not yet been fully developed or have implementation issues that will take time to resolve. The industry raised these issues in their responses to the RFC, but they were not addresses in the NPRM. These issues included the following:

Continuously Variable Transmission (CVT) – Application is limited to smaller, lightweight vehicles with limited trailer tow capability. "However, production costs, torque limitations, and customer acceptance of the system's operational characteristics must be addressed." (NAS - 38)

Drag Reduction – Vehicle aerodynamic changes must be carefully thought out as some may impact vehicle compatibility. In advocating changes in this area, the Agency must specify what improvements it has reviewed that do not increase safety concerns and that have not already been incorporated into the fleet. We recommend that NHTSA delete this technology from the list of available options. "However, vehicle styling and crashworthiness have significant influences on the ultimate levels that can be achieved." (NAS - 39)

[2] NRC (National Research Council). 2002, Effectiveness and Impact of Corporate Average Fuel Economy (CAFE) Standards, Washington DC, National Academy Press

Improved Rolling Resistance – FMVSS standards including the impact of the new TREAD ACT will severely limit any additional use of low rolling resistance tires. NHTSA must specify precisely which tires are available that meet all the required standards and have lower rolling resistance compared to tires already being used. Constraints of winter and foul weather driving conditions must also be taken into consideration when NHTSA determines which tires comply with all the constraints. We recommend that the Agency remove this technology from the list of available options. "The impacts on performance, comfort, durability, and safety must be evaluated." (NAS - 39)

Integrated Starter/Generator (ISG) – Real world fuel economy gains are limited by the need to operate the engine when the air conditioning or heater is operational.

Electric Power Steering – Some potential for use with an impact approximately 1 to 2%. When combined with other features that require power, incorporation of the technology requires a 42-Volt system. Increased battery maintenance must be factored into the consumer cost for this technology.

Cylinder Deactivation – "However, engine transient performance, idle quality, noise and vibration can limit efficiency gains and must be addressed." (NAS - 36)

Low-Friction Lubricants – The International Lubricant Standard Advisory Committee issued its GF-3 standards in 2001. These low friction engine oils have been fully incorporated into the market. The new GF-4 specification is set to be finalized later this year or early next year and has been fully anticipated to be included in the fleet for many 2004MY vehicles and all 2005MY vehicles. This is another case where the technology is already incorporated into production plans for vehicle manufacturer. If the Agency is anticipating a low-friction technology beyond GF-4, then the Agency must specify the technology or delete it from the list of available technologies.

Multi-valve per Cylinder Engines – According to the 2003MY EPA mileage guide, 37% of light duty truck models already offer engines that include multi-valve technology. The cost of the technology is generally higher than anticipated by the Agency and the fuel economy benefits are generally lower. We recommend doubling the cost per percent improvement in the assessment.

Engine Friction Reduction – Most engines have been incorporating friction-reducing techniques for 20 years now. There remain some opportunities, but it is at the low end of the assessment (approximately 1%). Various approaches can be used to reduce engine friction such as crankshaft offset and reduced piston oil-ring tension. These technologies must be designed into the basic engine and may require other design changes to enable their use (i.e., reducing piston oil-ring tension requires cylinder liners with very low bore distortion). These technologies cannot be simply “added on” to an existing engine without costly redesign and retooling. The expected cost for technologies not already employed into the fleet is $75 to $100 per percent improvement in fuel economy.

Variable Valve Lift and Timing (VVLT, 2-step lift) – The NRC Report states that this is primarily a pumping loss reduction technology. There will be benefits due to improved air/fuel mixing, so some benefit must be attributed to improved thermal efficiency. However some penalty must be attributed to friction due to the increased number of sliding components required to realize a 2-step lift system, and to increased oil pump losses due to the need for more oil pump capacity. Additionally, application of this technology to a multi-valve base engine will not result in sufficient incremental performance improvement to allow downsizing the engine.

Intake Valve Throttling (continuously variable lift) – The NRC Report states that this is primarily a pumping loss reduction technology. However, countervailing effects include a friction penalty owing to more sliding valve train elements and a thermal penalty owing to reduced large scale charge motion leading to lower burn rates.

Camless Valve Actuation – The NRC Report states that this is primarily a pumping loss reduction technology. Numerous issues are associated with this, e.g., limited speed range, hence lower power density necessitating upsizing, and also higher parasitic losses. Although there is potential, many obstacles must still be overcome before this technology will be ready for implementation.

42-Volt Electrical System – This alone will not be used solely for fuel economy improvement. This may reasonably complement a full array of electrical features including integrated starter generator.

Variable Compression Ratio – The NRC Report states that this is primarily a thermal efficiency improvement technology due to the ability to optimize the compression ratio as engine load and speed change. However, the NRC Report does not mention the fact that additional parasitic losses are required to actuate the variable compression ratio mechanism. This technology is suited to downsized, boosted engines - it is likely that this is the only application where this technology is well suited.

5 and 6 Speed Transmissions – According to the 2003MY EPA mileage guide, 23% of light duty truck models already offer 5 speed automatic transmissions and 100% of manual transmissions have 5 or more forward gears. While 6-speed transmissions are beginning to appear in some luxury/performance passenger cars, including Aston Martin, Ferrari, and Maseriti, the cost of the technology makes it prohibitive for most applications beyond high-end products at this time.

For emerging technologies, such as continuously variable transmissions, a time period of at least three to five years is needed to prove the technology in production through low volume introduction. This time is required to not only validate the technology in the field, but to test customer acceptance of the technology's characteristics. Once the technology receives acceptance, phase-in of the technology can be accomplished across some vehicle lines. It is estimated that this process spans another ten to fifteen years. This assumes that consumers deem the technology cost effective or desirable and that another technology is not introduced that is more viable.

The Cost Effectiveness Methodology Overestimates Fuel Economy

It appears that the model that the Agency used to determine cost effectiveness has many similarities to the techniques used in the NRC analysis. The Alliance's position on the NRC Report analysis was detailed in the October 5, 2001 hearing. The use of the NRC methodology can result in an overestimation of fuel economy and understate the costs. The following are some of the concerns with the use of the NRC method that apply to the analysis used by the Agency.

First among our concerns is that the NRC report did not sufficiently examine or fully account for system-level effects of combining technologies. Multiple technologies that address the same opportunity for improvement, e.g., pumping losses, cannot be added together in a straightforward manner.

Though the technology additions selected by the Agency in their analysis for 2005-07 MY light duty truck standards may not have significant interactions, the lack of a full examination of system-level effects could result in a set of projected fuel consumption reductions that overestimate the technologies' combined capabilities in future analysis.

The method used by the Agency added technologies in cost effectiveness ranking. However, certain technologies cannot be applied to a vehicle unless another technology has been previously implemented. The cost effectiveness rankings will be altered depending on which technologies already exist on the vehicle. For example, multi-valve technology must be in place before variable valve lift and timing can be used, similarly a 42-volt electrical system must be implemented before an integrated starter generator is added to a vehicle. Care must be used when ordering the technologies selected in the cost effective and technologically feasible analyses to ensure that results are not overstated.

Manufacturer Incremental Costs are Understated

The Alliance disagrees with conclusions that the average incremental costs per vehicle needed to meet the proposed standards are $14 for 2005, $28 for 2006, and $47 for 2007 model years. Many manufacturers have already added significant costs in anticipation of the increased CAFE standards that are not included in the Agency's incremental costs. Therefore, the base plans submitted by the manufacturer should not be used as the baseline calculation. A more appropriate baseline would be to use data from the current model year assuming the manufacturers meet the 20.7 mpg CAFE standards absent technologies used in anticipation of future standards.

Attributes of Vehicles Over 8,500# GVWR

NHTSA requested comments on whether consumers are more likely to purchase larger trucks (over 8,500 pounds GVW) to obtain the perceived benefit of additional horsepower or more likely to purchase trucks of a like size with smaller engines. These vehicles are generally designed to perform a unique work-related or commercial function. The shift of a few customers either way is unlikely to greatly impact the total energy use of the fleet.

The vehicles in the truck segment with a GVWR over 8,500 pounds fill a unique utility need (passenger carrying capability/towing/capacity). These vehicles are used for significantly different functions than the class of trucks less than 8,500 pounds GVWR. They are used significantly more for towing, hauling, and transporting large numbers of people. According to a 2001 New Vehicle Customer Study, trucks over 8,500 pounds GVWR are used for towing four times as often as trucks under 8,500 pounds GVWR, and are used for hauling twice as often. The data also show that heavy-duty sport utility vehicles, such as the Chevrolet Suburban or Ford Excursion, are used for towing 80 percent more often than large sport utility vehicles.

In the Benefits to Society Analysis, NHTSA Overstated the External Benefits

In the benefits analysis, NHTSA estimates the size of an “oil import premium” associated with the consumption of gasoline. This premium is the sum of two separate externalities, a premium for “monopsony power,” which NHTSA estimates at 4.5 cents per gallon, and for supply disruption costs, which it estimates at 3.8 cents per gallon, for a total of 8.3 cents per gallon in NHTSA’s externality cost estimates. NHTSA then adds this premium to the before-tax cost of gasoline to estimate the benefits of each gallon that might be saved by the proposed standards. Careful analysis shows that these benefits are insignificantly small, both absolutely, and in comparison to the external costs that result from mandating increases in the standard. NHTSA also estimates an external cost for environmental emissions at less than one tenth their estimate for the “oil import premium.”

We find that the sum total of all three external costs is exceedingly small and that NHTSA’s analysis fails to address far greater externalities associated with an increase in the CAFE standard, such as increased congestion and highway fatalities. Even if the NHTSA estimates of oil import and emissions externalities were accepted at face value, increasing the CAFE standard would, on balance, increase externality costs, not reduce them. Our analysis is presented as Attachment 2.

Consumer Evaluation of the Cost of Technology

The Agency invited comments on the ability of consumers to compare capital costs to expected fuel savings. Many of our consumers consider the fuel savings when evaluating added costs of technologies, however, their analysis is not as sophisticated as the NHTSA or NRC analyses nor is fuel economy a main driver in many of our consumers' purchase decisions.

There is a portion of customers who buy light trucks based on fuel economy, but it is much smaller than for small to midsize passenger cars. Fuel economy ranks eighth as a buying motivator in consumers’ purchase decisions according to J. D. Powers, and increases in importance only after the purchase is made. About nine percent of new vehicle buyers in 2002 (approximately 1.5 million new car buyers) rated environmental friendliness and advanced technology as “extremely important”. Even though passenger car buyers are more likely to consider the fuel economy benefit of a technology that will cost them more, they put other reasons above fuel economy. Other studies[3] of new customer buyers (both car and truck), confirm that fuel economy is a lower ranked purchase reason. Features such as safety, comfort, power and acceleration rank higher than fuel economy.

When J. D. Power surveyed customers in the 'Feature Contenting Report' regarding their interest in features in future vehicle purchases and their willingness to pay for them, only 21% of light duty pickup buyers 'definitely/probably want' a hybrid. This was the lowest interest of any vehicle segment. It should be noted that even when consumers indicate that they would want a specific technology and would be willing to pay for it, when offered, they choose not to spend the extra money. One example of this was the electric vehicle programs, which most manufacturers canceled after a decade of efforts to promote the vehicles.

Unfortunately, just considering the technology cost and fuel savings may not give the consumer the best advice in evaluating fuel savings features. Both Wards and Edmunds.com use the concept of ownership costs. The total cost to the consumer over their use period should also consider depreciation, financing, insurance, taxes and fees, maintenance and repairs in addition to the cost of the technology and fuel savings.

NHTSA notes that its estimates of cost-effective fuel economy improvements are inconsistent with the assumption of consumer rationality in a well-functioning, competitive market. NHTSA wonders if ill-informed consumers, or a lack of sufficient competition among manufacturers, can explain the inconsistency or whether NHTSA’s cost and/or benefit estimates are incomplete. We believe that consumers are rational, and that the problem lies in NHTSA’s cost-benefit methodology that is inherently biased in favor of over predicting economically feasible fleet average fuel economy gains. Refer to Attachment 3 for a more detailed discussion of consumers' rationality.

Competitiveness of the Market and Technical Tradeoffs

The Agency requested comments on the competitiveness of the light truck market and the technical tradeoffs between fuel efficiency and other characteristics of light trucks that consumers value. As demonstrated by sales trends over the past several years, the light truck market continues to grow as fuel prices stabilized and consumers became aware of and demanded the features and conveniences offered by these vehicles. As a result of this growth, the light truck market is also increasing in competitiveness. Specifically, while the sales of light trucks are projected to increase slightly during the period of 2005-2007, the number of available types of light trucks is increasing at an even greater rate. Because of increasing consumer demand, manufacturers that historically have been passenger car only manufacturers are now in the process of becoming full-line manufacturers. As a result, more and more new models of light trucks are being offered resulting in increased competition in the light truck category. Attachment 3 contains additional information on the competitiveness of the industry and a discussion of why it is the vehicle customer, not the manufacturer, who determines the level of fuel economy and other attributes that are produced and sold in the U.S. market.

With regard to fuel economy versus other vehicle attributes, there are a number of features consumers expect and demand of light trucks that are inconsistent with high fuel economy. Specifically, technical tradeoffs competing with fuel efficiency include power, safety and design. Light truck customers generally buy such vehicles in order to use their vehicles for cargo hauling, outdoor activities (e.g., hunting, camping, or fishing), or towing. These customers demand a vehicle that can transport people, as well as address the needs enumerated above for both recreational and/or work related purposes. Because of their specific needs, light truck owners value certain vehicle attributes more than car buyers and tend to put an emphasis on utility versus fuel economy. Attributes such as cargo capacity, towing capacity, passenger seating

[3] Source: MARITZ Marketing Research Inc, 2000 NVCS Report, Published October 2000.

capacity, and interior roominess take priority over fuel economy. In general, as the driver's utility requirement increases, the vehicle size tends to increase and the importance placed on fuel economy decreases. Consumer choice is demonstrated not only in the increasing percentage of light trucks on the American roads, but also in consumer selection of options within a product line-up, particularly the selection of larger displacement engines.

Meeting safety requirements also has been a major contributor to the increasing mass of vehicles. This increased mass further reduces vehicle fuel efficiency. The competitive nature of the market coupled with consumer demand tends to drive resource utilization. Consumers demand features such as third row seats, power sliding doors, heated seats, and additional safety equipment. Fuel economy, on the other hand, is not high on the list of desired features compared to some of the foregoing. As a result, market forces tend to minimize incentives for increasing fuel economy, especially in light of the demand for vehicle features and attributes incompatible with higher fuel economy.

The competitive and global nature of the auto industry is sufficient incentive to develop and, as appropriate, introduce new technologies that add to consumer value. Contrary to the statement in the NPRM, consumers would not be better off if manufacturers were forced to offer more fuel-efficient technologies. Automakers are adding new technologies to vehicles when such technologies are ready for market, when they become affordable to consumers, and when the infrastructure exists to sustain them.

CAFE Alternatives Must be Carefully Evaluated

NHTSA indicated that they are examining possible reforms to the CAFE system and that they may later propose specific reforms. When considering alternatives to the current CAFE system, NHTSA should be cognizant of the fact that any program to regulate fuel economy will have different effects on different manufacturers. Manufacturers who produce significant numbers of inherently lower fuel economy vehicles (due to their large size or performance/luxury characteristics) are more constrained by stricter CAFE standards than manufacturers whose fleets have relatively fewer of these vehicles.

There are a myriad of important details for any given fuel economy regulatory framework so the following comments are general in nature. No CAFE alternative ensures energy savings or a fair distribution of tasks. Each structure has unintended consequences and non-trivial impacts on the automobile sector and consumer. Except for energy demand reduction policies, each alternative alters the existing system and creates new winners and losers.

The industry has long pointed out that the major flaw in the CAFE program is that it does nothing to encourage consumers to buy more fuel-efficient vehicles. To encourage consumers to buy more fuel-efficient cars, automakers encourage tax credits for alternative technology vehicles. Attachment 4 is a copy of the Alliance comparison of CAFE modifications submitted with our May 8, 2002 submission. Additional information on CAFE alternatives is contained in the May 2002 response.

EIA Studies of Higher Truck CAFE

NHTSA invited comments on the model developed by the Department of Energy's Energy Information Agency (EIA) that showed directionally opposite results compared to NHTSA's cost-benefit analysis. The EIA model showed higher CAFE standards would decrease GDP, cause job losses, and is accompanied by a reduction in vehicle weight. NHTSA chose not to rely upon the EIA analysis in this rulemaking, explaining that the EIA's model "is more useful for analyzing the effects of longer-term industry-wide effects of larger increases in the standards."

The EIA published two analyses related to the costs and benefits of increased light truck CAFE standards. In the first, EIA analyzed truck CAFE standards of 21.2, 21.7 and 22.2 mpg in 2005-2007, respectively. Although these standards differ slightly from the proposed standards of 21.0, 21.6 and 22.2, the results would be expected to be generally consistent if the study was redone at the NPRM proposed levels. These truck CAFE increases are forecast to cost 105,000 U.S. non-agricultural jobs by 2010, result in cumulative discounted GDP losses of $31 billion, and raise truck prices by $275 per vehicle by 2010 (expressed in 2001 dollars). Vehicle weight is forecast to be reduced compared to the baseline projection of industry trends without the CAFE increase.

In the second study, EIA analyzed energy and economic impacts of the proposed truck CAFE standards of 21.0, 21.6 and 22.2 mpg for 2005-2007, respectively. However, this analysis is somewhat complicated by the use of three "cases," none of which corresponds precisely with the actual conditions under which the proposed standards would be implemented. Case 1 assumes that manufacturers are not constrained by the CAFE standard, but may elect to pay CAFE fines. Case 2 also assumes that manufacturers may elect to simply pay fines, while also adding the assumption that weight reduction must be minimized as part of CAFE compliance actions. Case 3 assumes that weight reduction must be minimized. Each of the assumptions listed above differs from current conditions. However, the results of this analysis are still instructive and confirm the results of the first EIA study, as described above. Cumulative discounted GDP changes are still all consistently negative, with GDP losses of $19 billion to $37 billion. In addition, the high end of the cost range is the only case in which manufacturers cannot elect to simply pay CAFE fines. U.S. job losses and truck price increases are also comparable to those in the first study, approximating 100,000 lost jobs by 2010 and truck price increases of a couple of hundred dollars per vehicle.

We believe the EIA analyses are directionally correct, and should have been fully considered by NHTSA in this rulemaking.

Comments on Section VII - The Effect of Other Government Regulations on Fuel Economy

The Agency evaluated the impact of the Federal motor vehicle safety standards on the ability of manufacturers to meet the proposed standards. The Agency concluded that the only fuel economy effect of the safety standards that will be in effect by the 2007 MY will be a weight increase of about 17 pounds per vehicle, and no adjustment to the proposed CAFE standards was made for this weight increase. However, the Alliance believes that the Agency substantially underestimated the weight increase that will result from the safety standards. Several manufacturers submitted their estimates of weight increases and the corresponding effect on their CAFE in their responses to the RFC, and their weight estimates were up to ten times the NHTSA estimate. The EIA analysis also cited increased vehicle weight due to anticipated changes to FMVSS 214 as the primary reason for the 0.1 to 0.2 mpg shortfall in the manufacturer's achievement of the proposed CAFE standards.

FMVSS standards including the impact of the new TREAD Act will severely limit any additional use of low rolling resistance tires.

A further discussion of the effects of the safety standards on CAFE will be addressed in the responses of individual manufacturers.

Comments on Section VIII - The Need of the Nation to Conserve Energy

Energy Trends

The Agency concluded that past fuel economy increases have had a major impact on U.S. petroleum use. Experience shows that increased fuel economy alone does not result in a reduction in oil imports. The import share of U.S. oil consumption was 35 percent in 1974. New car fuel economy has doubled since then, while the percentage of U.S. oil consumption supplied by imports has risen to over 50 percent.

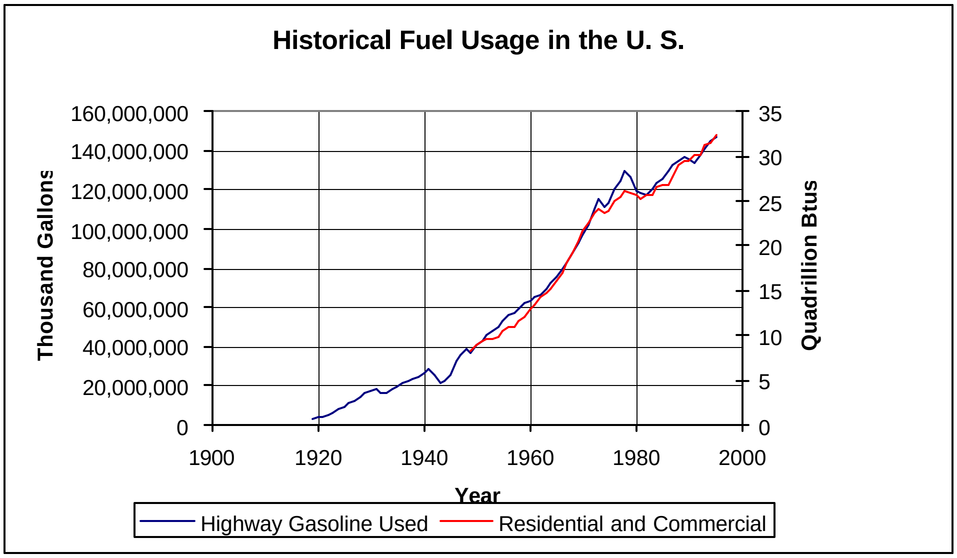

Chart 2

While we do not know what would have happened absent CAFE, Chart 2 suggests that CAFE has had relatively small impacts on aggregate fuel consumption. A comparison of transportation fuel usage to residential and industrial fuel usage shows there has been a parallel increase over the past 80 years with no offset during the CAFE years. Both sectors had the same pattern of growth in consumption, yet residential and commercial consumption was not subject to efficiency regulation. Overall consumption was overwhelmed by growth in VMT. In fact, only in the oil shocks did we see divergence from the growth path - again, confirming that consumers respond to the economic incentives.

Advanced vehicle technology will help improve the fleet fuel economy. Consumer tax incentives for the purchase of advanced technology vehicles can help offset the initially higher costs of these new technologies and encourage consumers to purchase them. This approach can accelerate the dissemination of these technologies into the marketplace more quickly, providing larger gains in vehicle and fleet fuel economy levels with less adverse impact on consumer choice, safety, and vehicle utility.

Comments on Section IX - Rulemaking Analysis and Notices

Executive Order 13132 and Preemption of State Fuel Economy Regulations

The Alliance agrees with NHTSA's analysis of Executive Order 13132 on Federalism and supports the conclusion that its NPRM does not have an impact on the legislative or rulemaking authority of the states. As noted in the NPRM, 49 U.S.C. § 32919(a) expressly prohibits states and political subdivisions of states from adopting or enforcing laws or regulations related to fuel economy standards. Congress inserted this provision into the law because it understood that a patchwork of state and local regulations governing the fuel economy of vehicles would hinder interstate commerce, impose an undue burden on motor vehicle manufacturers, and could ultimately interfere with the ability of consumers to choose the type of vehicles they wish to drive.

As correctly noted in the NPRM, Executive Order 13132 applies only to regulations or policies that would have substantial direct effects on the states, would impact the relationship between the federal government and the states, or would affect the distribution of power and responsibilities among the various levels of government. NHTSA's NPRM would do none of this. Congress delegated sole responsibility for the promulgation of fuel economy standards to the Department of Transportation nearly 30 years ago, and all levels of federal and state government have abided by this arrangement ever since. The NPRM is merely the latest step in this longstanding process.

We note that some state governments have recently enacted, or are considering, laws and regulations relating to fuel economy. The DOT has properly relied on 49 U.S.C § 32919(a) to head off similar efforts in the past, notably one state's plan for a "feebate" scheme based on vehicle fuel economy. We believe NHTSA should continue to take an active role to ensure that the federal preemption language is enforced, so that our system of nationwide CAFE standards is not undercut by a jumble of state and local standards.

Other Concerns on the Agency's Cost Assessment Methodology

There are several concerns with the Technology Application Algorithm spreadsheets that were used to determine the costs and benefits associated with the proposed standards and technologies.

- The spreadsheet uses survival rates from the Transportation Data Book edition 21 through a vehicle age of 25 years. Various spreadsheets in this model reference the look-up table to perform calculations for vehicles up to the age of 30 instead of the 25 years cited in the preamble of the rulemaking. To conduct calculations for years 25 through 30, the algorithm uses the vehicle survival rate for year 25 and the mileage rate for a 25-year-old vehicle. The survival rate for vehicles at age 25 of 12.6% is significantly greater than the rate for ages 26 through 30 of 10.3 through 4.2%. The Agency should recalculate the costs using only a 25-year useful life using the survival rate from the latest Transportation Data Book.

- The model's societal value and actual benefits to customers assumes that a portion of the vehicle fleet are driven 255,000 miles and that the technology provides the full fuel economy benefit during the vehicle's entire life. No provision is made for the added maintenance costs associated with the more complex technologies.

- The calculated total of the gasoline tax is not the sum of the state taxes and federal taxes listed in the spreadsheet. The Agency should explain what other taxes are included in their analysis or revise the values in the model.

- The model does not factor in the lost highway tax revenue in its analysis. This should be used when conducting the benefits analysis and will reduce the societal benefit by $200 to $300 million per year – almost $1 billion over the life of the standard. The actual benefit to the customer should also be reduced by this same amount.

- The 15% rebound effect used in the Agency's analysis underestimates the more probable rebound effect. The use of an underestimated effect will inflate the environmental and economic benefits and distort the safety risk of increased CAFE standards. We suggest that NHTSA instead use a rebound effect of 35% with a sensitivity analysis of 20% to 50%. The 35% figure was agreed upon in the CarTalk process.

- The Agency conservatively assumed that the California RFG has a zero market share. This is underestimated and should be increased at a minimum to 11%, the percent of RFG in use today.

The Oil Import Premium Externality

Monopsony Pricing Externality

The U.S. consumes about 25% of the world's oil supply, enough to give it some "monopsony" pricing power. Whether this limited power could be effectively exercised is a complicated question. We conclude, like Bohi and Toman (The Economics of Energy Security, Resources for the Future, 1996), that using U.S. monopsony pricing power has marginal benefits at best, and could well be harmful.

In theory, if world oil producers were not organized into a cartel, then the U.S. could benefit by reducing its consumption because this would reduce the price of oil. The U.S. would thus save money on each barrel of oil it consumed. However, this savings would come at the cost of lost consumer surplus on each barrel of oil no longer consumed. The loss of consumer surplus would be high because of the great value of oil and the absence of ready substitutes. "Optimal" consumption would occur when the loss of consumer surplus on the last barrel of oil no longer consumed was equal to the savings from the lower price for oil resulting from not consuming that last barrel.

The optimal level of consumption is determined by subtracting the "rest of world" oil demand curve from the world oil supply curve. Bohi and Toman estimate that the elasticity of this "net supply" curve is on the order of 6 to 16. The net benefits of "optimal consumption" with such high elasticities are 1 to 2 billion dollars - a gain of about one percent of the $200b the U.S. spends on oil each year.

In the real world, we face a cartel that would maximize profits by reducing output in response to lower oil demand. There is no determinative solution to this monopolist vs. monopsonist situation – oil prices could rise or fall in such a market. A reduction in world oil prices, despite the actions of the OPEC cartel, (perhaps as the result of a consumption tax, a tariff, or higher CAFE) would reduce the supply of oil from higher-cost U.S. and other non-OPEC producers. U.S. dependence on OPEC oil would thus increase in percentage terms because OPEC import levels would remain constant. Those who believe that dependence on OPEC oil is a problem must ask themselves whether the benefits from lower oil prices might be more than offset by the increase in the "energy security" externality associated with dependence on OPEC oil.

Most OPEC countries import U.S. goods and would reduce U.S. imports if they earned fewer U.S. dollars. Moreover, under WTO rules, if the U.S. imposed a tariff on oil, other countries would be allowed to retaliate with tariffs on U.S. export goods. Samuelson in Economics (all editions) briefly summarizes the "Optimal Tariff" literature and concludes that an optimal tariff would be quite small in theory, and would be harmful if copied by many other nations.

If the U.S. reduced oil consumption, in theory, it would benefit from a reduction in oil price. In practice, however, it is doubtful that the U.S. would benefit from the expected response by OPEC and from reductions in non-OPEC oil supplies. Therefore, NHTSA should not include any monopsony externality in its benefit analysis.

Supply Disruption Externality

The other 3.8 cents per gallon of NHTSA's 8.3 cents per gallon energy security externality relates to the potential costs of oil supply disruptions. This analysis fails to reference two major studies that question the existence of any significant externality associated with oil supply disruptions. In particular, the Congressional Research Service (CRS) concludes that there is no externality if the private sector uses hedges and private inventories to mitigate the costs of disruptions. Moreover, CRS points out that even if the private sector does not address those risks adequately, the public Strategic Petroleum Reserve provides additional mitigation to those risks. Thus, there is no externality unless some massive market failure prevents private inventories, hedges, and the SPR combined from providing sufficient mitigation of these costs Bohi and Toman question the existence of any significant market failure resulting from supply disruptions. In particular, they conclude:

> "The evidence that OPEC exerted sufficient market power to warrant the exercise of countervailing monopsony power is decidedly mixed. Moreover, to the extent that the evidence reveals the exercise of market power, it also raises the specter of a clumsy cartel being spurred to retaliation by concerted import demand reductions. For both reasons, then, the evidence supporting a policy-relevant externality directly related to the cost of oil imports is questionable."
>
> * * *
>
> "Finally, evidence for indirect externalities between oil imports and economic performance, for increased risks of market disturbance from higher imports, or for treating military expenditures as an energy-related externality are even more questionable." (Id, page 56.) * * * "[T]<u>he principal economic cost of a disruption arises because of the economic harm caused by an oil price shock and this harm will occur whether or not the United States imports any oil.</u> The harm will be largely the same even if imports are completely eliminated because the price of domestically produced oil is still determined by the world price, and any disruption that affects the world price will continue to affect the domestic price." (Bohi and Toman, op. cit., pages 53-54, emphasis added)

Given that any monopsony and oil supply disruption externalities are exceedingly small, we believe that the appropriate value for an oil import externality is zero. We also noted that successful oil conservation programs would actually increase oil imports as a fraction of domestic consumption

We would also note that the NHTSA proposal does not identify, as required by Executive Order 12866 and the accompanying economic analysis guidelines, "a reasonable number of regulatory alternatives" and then identify those that might be less costly or more effective than raising the CAFE standard for light trucks. The report does not compare the cost-effectiveness of raising the CAFE standard to that of, for example, increasing the availability of CAFE credits for alternative fuel vehicles, increasing the fill rate for the Strategic Petroleum Reserve, or reducing or eliminating regulatory barriers to the creation of natural gas and other alternative fuel supplies. We submit that those alternatives are far more beneficial and far less costly than raising the CAFE standard.

Other Externalities: Congestion, Emissions & Construction

Even if one accepted the NHTSA estimate of 8.3 cents per gallon as the appropriate level of any energy supply externality, it would have to be compared with any external costs imposed by increasing the CAFE standard. Of particular importance, and something that has been emphasized in the recent literature, is the cost of congestion that ensues as a result of increased driving. As discussed in the body of our comments, increased CAFE reduces the gasoline cost per mile and induces more vehicle miles traveled (the "rebound effect").

Randall Lutter in an AEI Brookings paper, "CAFE – The Numbers Behind the Story" (Policy Matters 02-13, March 2002), estimates the congestion externality at $0.024 per mile, and notes that other researchers place this cost between $0.01 and $0.25 per mile. (See also "Reducing Gasoline Consumption", Chapter 5, by the Congressional Budget Office, 2002, which cites work by Ian Parry at Resources for the Future.) At 150,000 miles per light truck and 93,000 "net miles" at 7% interest, we need to assume the size of the rebound effect to calculate this externality on a per gallon basis. Under the proposed NPRM, a rebound effect of 25% can be shown to save 268 net gallons per truck and causes a $40.43 congestion externality, or $0.15 per gallon. A rebound effect of 35% saves 232 net gallons and causes a $56.61 congestion externality, or $0.24/gallon externality. Even if we use the unrealistically low NHTSA estimate of a 15% rebound effect, the NPRM saves 304 net gallons and causes a $24.26 externality, or $0.08/gallon externality.

Therefore, if the unrealistic rebound effect of 15% is used, the $0.08 per gallon congestion externality offsets NHTSA's identified externalities of $0.08 per gallon. If more defensible rebound effects are used, the congestion externality more than offsets NHTSA's other two externalities. As a recent study of alternative policies to reduce gasoline consumption commissioned by Congress and performed by the Congressional

Budget Office (CBO) concludes, "Moreover, using CAFE standards to reduce congestion would entail *lowering* those standards."[4]

The CBO study also found that increased congestion costs associated with increased driving caused by an increase in the CAFE standard would substantially exceed the sum total of any savings on the external costs of emissions and highway construction.

Conclusion

The sum total of energy security externalities that might be mitigated by an increase in the CAFE standard for light trucks is very small, and less than the increased cost to auto drivers as a group of increased congestion alone, without even considering the cost of increased highway accidents. There is no market failure associated with increased fuel consumption. There is a government regulatory failure associated with the regulation of gasoline consumption

[4] (CBO, "A CBO Study: Reducing Gasoline consumption: Three Policy Options" (November 2002) Chapter 5, page 2.)

Consumer Rationality and Characteristics of the Market

NHTSA is concerned that its estimates of cost-effective fuel economy increases are inconsistent with the behavior of rational consumers and manufacturers in a competitive market. It also wonders if there is a better way to model how purchasers of light trucks evaluate the benefits and costs of fuel efficiency technologies. Specifically, the agency observes:

> "In a well-functioning market with fully informed consumers and manufacturers, consumers would take into account the savings to themselves associated with more fuel-efficient vehicles. *If the value of cumulative fuel savings exceeded the additional price and associated financing cost of purchasing a more fuel-efficient vehicle, consumers should be inclined to buy these vehicles and producers should be inclined to sell them."* (p. 77023, emphasis added.)

We believe that consumers and manufacturers of motor vehicles are informed about the benefits and costs of fuel economy, and the market is extremely competitive. The answer to NHTSA's quandary lies with its incomplete and inaccurate engineering estimates – not with the well-functioning motor vehicle market.

As NHTSA itself recognizes, its "cost and/or benefit estimates [could be] incomplete." It notes:

> "For example, it could be that greater fuel efficiency comes with tradeoffs in power, safety, and design not accounted for in NHTSA's estimated costs, that the engineering costs of implementing new technologies are actually greater than those estimated, or that the actual fuel savings are less than those estimated. The agency invites comments on the ability of consumers to compare capital costs to fuel savings, the cost to them of doing so, as well as suggestions for facilitating these calculations. The agency also invites comments on the competitiveness of the light truck market and the technical tradeoffs between fuel efficiency and other characteristics of light trucks that consumers value."

As NHTSA also states, any indirect externality costs associated with fuel consumption do not justify the high (opportunity) costs of restricting individual consumer choice.

The Alliance offers the following comments on these issues.

The motor vehicle market is extremely competitive

- More than twelve major automotive manufacturers serving the U.S. market compete for customers with almost a thousand models of cars (500) and light trucks (450).
- Manufacturers compete to give buyers maximum choice among numerous makes, models, options, and features, including fuel efficiency, safety, and performance.
- New light truck prices are at their lowest levels in seven years.
- Rates of return for the industry and for nearly every motor vehicle manufacturer competing in the United States are below that for the average firm in the S&P 500.
- A peer-reviewed study concludes that, because of intense competition from Ford and General Motors, consumers captured $2.8 billion of the $2.9 billion 5-year total societal welfare gain occasioned by Chrysler's introduction of the minivan in 1984.[5]
- In the intensely competitive U.S. motor vehicle market, customers – not manufacturers -- determine the levels of fuel economy and other attributes that are produced and sold.

Consumers and producers are informed and rational

- Buyers of new motor vehicles are extremely well informed about fuel economy and fuel costs.
- Numerous consumer and governmental publications report and compare the fuel economy and fuel costs of alternative cars and light trucks.
- Prices for gasoline are clearly posted at service stations.

[5] Amil Petrin, "Quantifying the Benefits of New Products: The Case of the Minivan," *Journal of Political Economy* (August, 2002), pages 705-729.

- Gasoline is frequently purchased so that consumers are well aware of the prices and of price changes.
- Every new vehicle carries a fuel economy label for comparative purposes.
- Many new vehicles display running average and marginal (instantaneous) values of their fuel economy on the instrument panel.
- Manufacturers utilize surveys, vehicle clinics, and extensive market analyses to determine what consumers want and are willing to pay for.
- Peer-reviewed studies show consumers make rational judgments about energy conservation.[6]

The recent Congressional Budget Office (CBO) study of CAFE concludes that auto buyers are rational and informed and that vehicle producers effectively respond to their preferences for fuel economy. The CBO notes that some proponents of increased CAFE standards "argue that automakers have low-cost ways to improve fuel economy, that the gasoline savings from those technologies would make consumers better off, and that without increases in CAFE standards, producers would fail to make use of those technologies. Their argument rests on the assumption either that consumers lack information about vehicles' fuel efficiency (*in other words, they do not know what is best for them*) or that producers lack an incentive to respond to consumers' preferences for fuel efficiency." The CBO concluded:

> *"Most economists do not believe that either assumption is valid.* Vehicles' current level of fuel efficiency most likely reflects consumers' trade-offs between fuel economy and other characteristics that drivers want, such as vehicle mass, horsepower, and safety. *The same technologies that can be used to boost fuel economy can be used to hold fuel economy constant while increasing the vehicles' weight, mass, or power.* Thus, the fact that producers have done the latter rather than the former in recent years suggests that they have responded to buyers' preferences by targeting available technologies toward other features that consumers desire. Raising CAFE standards would impose costs on both consumers and automobile producers by forcing improvements in fuel economy that car buyers may not want."[7]

NHTSA's calculations should reflect the opportunity costs of foregone consumer choice

NHTSA's focus on the analysis of direct engineering costs of its proposed technologies fails to take into account real-world tradeoffs between fuel economy and other applications of advances in fuel efficiency technology. As the OMB noted in another proceeding regarding off-road recreational vehicles:

> "[Such an] analysis provides a useful 'accounting' of the directly measurable effects of the proposed standard but does not provide a benefit/cost analysis integral to the decision-making process . . . Any estimate of the economic costs of these standards should also include the loss in consumer surplus associated with the substantial costs of the proposal."[8]

As the Congressional Budget Office concludes; making public policy decisions based on projections that ignore tradeoffs between fuel economy and other vehicle attributes such as "power, safety, and design" is likely to impose substantial opportunity costs on consumers and producers and to impose substantial net costs on society, both absolutely and relative to other measures to conserve fuel and to address energy security issues.

[6] See, e.g., George G. Daly and Thomas H. Mayor, "Reason and Rationality during Energy Crises, *Journal of Political Economy*, Feb., 1983, pp. 168-81, and James A. Kahn, "Gasoline prices and the Used Automobile Market: A Rational Expectations Asset Price Approach," *Quarterly Journal of Economics*, May, 1986, pp. 323-340, which conclude that automobile consumers are fully rational in balancing purchase price against operating costs in their choice of used cars.

[7] Congressional Budget Office, *Reducing Gasoline Consumption: Three Policy Options* (November 2002), Chapter 2, page 2. (Emphasis added)

[8] Letter from Office of Information and Regulatory Affairs to Jeffrey R. Holmsted, Assistant Administrator, U.S. Environmental Protection Agency, September 24, 2001.

NHTSA requested for ways to “facilitate” their “calculations” regarding consumers’ comparisons of the capital costs of fuel economy hardware with the expected fuel savings. The solution to NHTSA’s quandary lies not with any inability of auto buyers to compare fuel savings with hardware costs. Rather, it is inherent to a methodology that assumes rational consumers would be willing to purchase more “fuel-efficient” vehicles so long as the present value of the additional energy savings exceeds the hardware costs. That is not how rational consumers behave. Improvements in fuel efficiency technology represent either the ability to reduce the amount of fuel required to move a given amount of mass (or achieve a given level of performance) or the ability to move more mass (or increase performance) for a given quantity of fuel consumed.

Consumers can choose to spend the same technology on any number of attributes besides fuel economy and the value of each of those other applications can also exceed the cost of the associated hardware in terms of the direct engineering costs and benefits. The question is not whether the value exceeds the cost for any one application such as increased fuel economy, but rather, of all the applications, which gives consumers their highest value for the money – i.e., which is cost-effective in an economic sense? Economists call this concept the “equal marginal principle” and it is a fundamental principle underlying their analysis of consumer and producer behavior. To quote MIT Professor Robert Pindyck and University of California Professor Daniel Rubinfeld:

> “Only when the consumer has satisfied the **equal marginal principle** – i.e., *has equalized the marginal utility per dollar or expenditure across all goods* – will she have maximized utility.”[9] (Boldface and italics in original.)

Consider, for example, a new fuel efficiency technology such as variable valve timing, which can be tuned either for fuel economy or performance or some combination of the two. Assume that the technology would yield fuel savings more valuable than the direct, engineering costs. Any attempt to force consumers to realize the value of this technology in the form of fuel economy alone would deny them the opportunity to spend the technology on improved performance, or to spend it on a still larger and heavier vehicle that achieved no net reduction in fuel consumption. Forcing consumers to take any or all of the new technology in the form of fuel economy would impose real opportunity costs – costs that the NHTSA methodology would ignore. In that case, NHTSA’s engineering model would find that applying variable valve technology to yield fuel economy improvements is “cost-effective” even though the full “opportunity” or economic costs of that application would exceed the value of the fuel savings.

In fact, according to data from the U.S. EPA, over the past 15 years, light truck manufacturers have offered America’s vehicle purchasers fuel efficiency improvements of 14% (0.9% per year). Yet, in spite of a full range of vehicle choice from large to small, these consumers have taken all of those improvements in the form of increased performance, mass, and safety and none of those improvements in the form of increased fuel economy. Nonetheless, NHTSA wants to increase the standard, imposing still more costs on vehicle consumers, already constrained by the existing standard.

In short, NHTSA’s projections of cost-effective fuel economy technologies are economically infeasible, even if their estimates of the direct costs and benefits of those technologies are accepted at face value. The fact that NHTSA and, indeed, the auto manufacturers have repeatedly, consistently, and substantially overestimated consumer demand for increased fuel economy – and in the face of a 14% improvement in fuel efficiency over the past 15 years – suggests that it is not just technology risks that haunt NHTSA’s historically optimistic projections. Rather, it is a systematic upward bias that fails to take into account how consumers can be expected to spend the money from fuel efficiency advances. When the NHTSA projections are adjusted for this bias, the cost-effective increase for the light truck standard ranges from zero to negative.

[9] Robert S. Pindyck and Daniel L. Rubinfeld, *Microeconomics*, (2001), p. 91.

In sum, there is no basis to impose the substantial (opportunity) costs associated with limiting consumer choice by raising the CAFE standard in the intensely competitive motor vehicle market with well-informed consumers and no significant negative externalities.

Comments On Other Possible Fuel Economy Improvement Measures

Simple Feebate
Set a trigger point for fuel economy, vehicles that exceed trigger receive rebates and those that fall below pay fees

Positives:
- None

Negatives:
- Another form of CAFE (subsidize small cars and penalize large cars to affect market mix)
- Removes a manufacturer's flexibility by externally imposing mix-shifts that may not help meet the standard
- Less efficient than full cost energy pricing (e.g., carbon or gasoline taxes)
- Feebate schemes are often misconstrued as a market-based system that addresses concerns with CAFE
- Burdens families, farmers, car poolers, and small businesses that require larger cars and trucks to meet their needs
- Focuses only on new vehicles and does not affect driver behavior - less efficient than full cost energy pricing (e.g., carbon or gasoline taxes)

Competitive Impacts:
- Transfers revenues from full line manufacturers to manufacturers concentrated at the small end of the market

Implementation Issues:
- Requires a new implementation bureaucracy and temptation will be to create revenue rather than maintain "revenue neutral" system

Size or Interior Volume Based Attribute Approach
Segment fleet by EPA size class (or some utility-based metric) with each class having its own fuel economy standard

Positives:
- Potential to insulate full line producers against segment mix shifts
- Market incentives can be targeted at a specific model that is above the standard in its size class
- Aligns with customer desires for more interior space

Negatives:
- Not all customer-desired vehicle attributes are tied to interior volume (e.g., vehicle performance, towing capability, 4-wheel drive)
- Current EPA truck segmentation is not suitable for this purpose -- new classifications would have to be developed
- Since it is a class-based approach and not a continuous measure, have undesired affect of rewarding packages moved into next higher size class
- Class-based approach lumps vehicles and sets standards that do not fully account for vehicle differences
- Does not guarantee fleet fuel economy improvement and therefore is not an improvement over CAFE
- Focuses only on new vehicles and does not affect driver behavior - less efficient than full cost energy pricing (e.g., carbon or gasoline taxes)

Competitive Impacts:
- Specific models could be unfairly penalized (e.g., a 4-wheel drive SUV could have equivalent interior volume to a FWD sedan)

<u>Performance Based Attribute Approach (horsepower or displacement)</u>

Segment fleet into horsepower classes with each class having its own fuel economy standard

Positives:

- Aligns with customer desires for more powerful engines
- Potential to reward highly efficient variations of a model while not rewarding the less efficient variations
- With classes based on powertrains, not models, high and low fuel-efficient vehicles would be more differentiated leading to greater focus on powertrain efficiency and less on aerodynamics, rolling resistance, etc.

Negatives:

- Not all customer-desired vehicle attributes are tied to performance (e.g., interior volume, 4-wheel drive)
- Currently no accepted classes based on engine displacement or power
- Class-based approaches, compared to continuous measures, have undesired affect of rewarding packages moved into next higher horsepower class
- Removes flexibility to improve fuel economy by lowering the mix of more powerful engines for any given model
- Class-based approach lumps vehicles and sets standards that do not fully account for vehicle differences
- Does not guarantee fleet fuel economy improvement and therefore is not an improvement over CAFE
- Focuses only on new vehicles and does not affect driver behavior - less efficient than full cost energy pricing (e.g., carbon or gasoline taxes)

Competitive Impacts:

- Specific models would be unfairly penalized
- Favors manufacturers with higher power to weight ratios - creates different winners and losers

<u>Uniform percent increases</u>

Positives:

- Every manufacturer has to improve

Negatives:

- Potential to penalize fuel economy leaders for early improvements
- Does not account for fleet mix changes
- Focuses only on new vehicles and does not affect driver behavior - less efficient than full cost energy pricing (e.g., carbon or gasoline taxes)

Competitive Impacts:

- Manufacturers impacted differently - creates different winners and losers

<u>Carbon Tax</u>

Controls applied upstream at the mine mouth or well head of the energy source -ultimately translate to increased fuel prices for all energy-use streams, based on the carbon content of the fuel

Positives:

- Market-based, cost-effective option causing minimum economic disruption -- market will determine how best to use energy
- Provides largest CO2 reductions at lowest cost (approximately 2,000 energy providers/sources worldwide)
- Economic studies have shown carbon taxes to be much more cost effective than CAFE system for reducing CO_2 emissions
- Other industries (such as oil and utilities) and consumers forced to share CO_2 reduction burden

- Incremental restrictions (controls) on energy would allow marketplace to learn and adjust
- Affects all energy users - applies to entire vehicle park, not just new vehicles
- Reduces vehicle miles traveled, encourages more energy-efficient driver behavior, and leads to the purchase of higher fuel economy vehicles

Negatives:

- Policies would have to be developed to help lower income families who pay higher percentage of income for energy

Competitive Impacts:

- Assuming slow price increases, does not burden one manufacturer over another
- Market pulls full line manufacturers towards smaller vehicles or requires added technology, which now becomes cost effective

Implementation Issues:

- Any shift from application upstream to downstream quickly becomes unworkable and less efficient
- Most effectively applied at international level
- Slow increases in fuel prices would allow manufacturers and consumers to adjust to changing market conditions

Carbon cap and trade

Controls applied upstream at the mine mouth or well head of the energy source; ultimately translate to increased fuel prices for all energy-use streams; trading allowed between fuel providers. Same as carbon tax - except trading allows upstream energy providers additional flexibility

Gasoline tax

Controls applied at the fuel pump

Positives:

- Economic studies have shown gasoline taxes to be much more cost effective than CAFE system for reducing CO_2 emissions
- Incremental restrictions (controls) on gasoline would allow marketplace to learn and adjust
- Affects all gasoline users - applies to entire vehicle park, not just new vehicles
- Reduces vehicle miles traveled, encourages more energy-efficient driver behavior, and leads to the purchase of higher fuel economy vehicles
- Could be structured to speed the introduction of cleaner fuels that will enable more fuel efficient vehicle technologies

Negatives:

- Less economically efficient than carbon tax - does not capture other business sector's fossil fuel use
- Policies would have to be developed to help lower income families pay higher percentage of income for energy

Competitive Impacts:

- Assuming slow price increases, does not burden one manufacturer over another
- Market pulls full line manufacturers towards smaller vehicles or requires added technology, which now becomes cost effective

Implementation Issues:

- Slow increases in fuel prices would allow manufacturers and consumers to adjust to changing market conditions